

1. A borehole telemetry system comprising:
a coiled tubing string for use in the borehole;
a receiver coupled to the coiled tubing string; and
a transmitter coupled to the coiled tubing string;
wherein the transmitter generates signals guided for at least a portion of their path by the entire internal cross-section of the coiled tubing string to the receiver.
2. The borehole telemetry system of claim 1 wherein the receiver is located within the coiled tubing string.
3. The borehole telemetry system of claim 1 wherein the transmitter is located within the coiled tubing string.
4. The borehole telemetry system of claim 1 further comprising an instrument coupled to the transmitter.
5. The borehole telemetry system of claim 1 further comprising a storage device coupled to the receiver.
6. The borehole telemetry system of claim 1 wherein the signals comprise a modulated microwave signal.
7. The borehole telemetry system of claim 1 wherein the signals comprise a TE₀₁ mode signal.
8. The borehole telemetry system of claim 1 wherein the signals comprise a TE₁₁ mode signal.
9. The borehole telemetry system of claim 1 wherein the coiled tubing string contains nitrogen gas.
10. The borehole telemetry system of claim 1 wherein the coiled tubing string comprises a continuous helical metal conductor.

11. The borehole telemetry system of claim 1 wherein the coiled tubing string comprises a composite material housing.

12. A borehole telemetry system comprising:
a coiled tubing string substantially rotatably fixed in the borehole;
a receiver coupled to the coiled tubing string; and
a transmitter coupled to the coiled tubing string;
wherein the transmitter generates signals guided for at least a portion of their path by the coiled tubing string to the receiver.
13. The borehole telemetry system of claim 12 further comprising an antenna coupled to the receiver.
14. The borehole telemetry system of claim 12 further comprising an antenna coupled to the transmitter.
15. The borehole telemetry system of claim 12 further comprising an instrument coupled to the transmitter.
16. The borehole telemetry system of claim 12 further comprising a storage device coupled to the receiver.
17. The borehole telemetry system of claim 12 wherein the signals comprise a modulated microwave signal.
18. The borehole telemetry system of claim 12 wherein the signals comprise a TE₀₁ mode signal.
19. The borehole telemetry system of claim 12 wherein the signals comprise a TE₁₁ mode signal.
20. The borehole telemetry system of claim 12 wherein the coiled tubing string contains nitrogen gas.
21. The borehole telemetry system of claim 12 wherein the coiled tubing string comprises a continuous helical metal conductor.

22. The borehole telemetry system of claim 12 wherein the coiled tubing string comprises a composite material housing.

23. A method for communicating in a borehole, comprising the steps of:
generating signals at a transmitter coupled to a coiled tubing string in the borehole;
transmitting the signals in the entire internal cross-section of the coiled tubing string along at least a portion of their path; and
receiving the signals at a receiver coupled to the coiled tubing string.
24. The method of claim 23 wherein the signals correspond to the proximity of a casing collar to a sensor.
25. The method of claim 23 further comprising the step of receiving signals from an instrument at the transmitter.
26. The method of claim 23 further comprising the step of amplifying the received signals.
27. The method of claim 23 further comprising the step of demodulating the received signals.
28. The method of claim 23 further comprising the step of converting the frequency of the received signals.
29. The method of claim 23 wherein the signals comprise a modulated carrier of approximately 5-30 GHz.
30. The method of claim 23 further comprising the step of injecting gas into the coiled tubing string.